

Lesson 5-2

Key Idea

Patterns can help you remember multiplication facts.

Vocabulary

- multiple
- Zero Property of Multiplication
- Identity Property of Multiplication
- Commutative Property of Multiplication

Materials

- hundred chart



Think It Through
I can use patterns to help me find the facts for 2, 5, 9.

Patterns in Multiplying by 0, 1, 2, 5, and 9

LEARN

What are the patterns for multiples of 2, 5, and 9?

A **multiple** is the product of any two whole numbers.

WARM UP

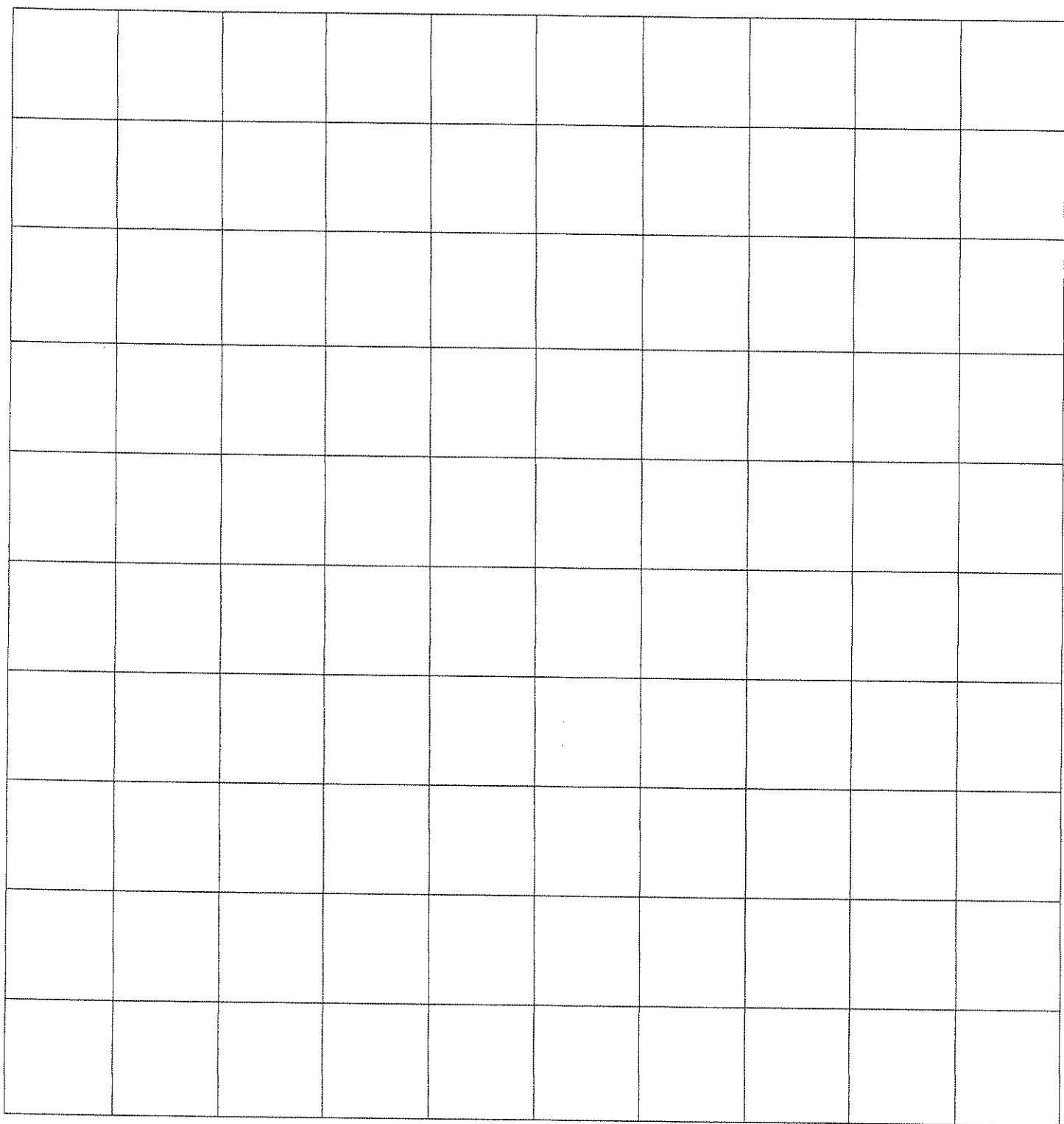
Find the pattern. Fill in the blanks.

- 2, 4, 6, , ,
- 5, 10, 15, , ,
- 9, 18, 27, , ,
- 10, 20, 30, , ,

Activity

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- Copy and complete the hundred chart shown above.
- Many things come in pairs, such as socks and mittens. Skip count by 2s. Put a triangle around each multiple of 2. What pattern do you see in the multiples of 2?
- Skip count by 5s. Put a square around each multiple of 5. What pattern do you see in the multiples of 5?
- Skip count by 9s. Put a circle around each multiple of 9. What pattern do you see in the multiples of 9?
- What patterns do you see for the numbers that have both triangles and squares?
- Explain how you know that 73 is not a multiple of 5.
- Explain how you know that 89 is not a multiple of 9.



Name: _____

Chapter 3 A Review

1. Write the addition number sentence shown in the picture group?

XXXXX XXXXX	XXXXX XXXXX	XXXXX XXXXX
----------------	----------------	----------------

2. Write the multiplication number sentence shown in the picture group?

XXXXX	XXXXX	XXXXX
-------	-------	-------

3. Draw an array that shows 3×4 ?

4. Write a number sentence equal to $2 + 2 + 2 + 2 + 2 = 10$.

5. Express this number fact as repeated addition.

$$6 \times 5 = 30$$

a. $6 + 6 + 6 + 6 + 6 + 6 = 30$

b. $10 + 10 + 10 = 30$

c. $3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 30$

d. $5 + 5 + 5 + 5 + 5 + 5 = 30$

6. Which number sentence is correct?

a. $(3 \times 8) \times 1 = 23$

b. $(3 \times 8) \times 0 = 24$

c. $(8 \times 3) \times 2 = 48$

d. $(8 \times 3) \times 1 = 0$

7. What are the factors of $12 \times 1 = ?$ _____

Find the product.

1. $3 \times 8 =$

6. $5 \times 5 =$

2. $4 \times 9 =$

7. $9 \times 9 =$

3. $7 \times 8 =$

8. $3 \times 3 =$

4. $2 \times 0 =$

9. $12 \times 3 =$

5. $1 \times 10 =$

10. $8 \times 9 =$

Use the distributive property to solve.

1. $11 \times 8 =$

5. $9 \times 7 =$

2. $12 \times 4 =$

6. $12 \times 12 =$

3. $5 \times 9 =$

7. $12 \times 9 =$

4. $8 \times 8 =$

8. $7 \times 6 =$

Get out Multiplication flash cards and practice with partner!!!

Chapter 3 Part B Review

Name: _____

1. Draw 16 circles split up into 8 parts.
2. Draw 10 triangles split into 2 parts
3. Write the fact family for 2, 6, 12
4. Write the fact family for 5, 8, 40
5. Write the fact family for 5, 5, 25
6. What Multiplication problem can be used to solve this problem?
 $49 \div 7 =$
7. What Multiplication problem can be used to solve this problem?
 $56 \div 8 =$
8. What Multiplication problem can be used to solve this problem?
 $10 \div 1 =$



9. What Multiplication problem can be used to solve this problem?

$$0 \div 7 =$$

10. Solve the problem and label the **quotient**, **divisor**, and **dividend** in each problem

11. $4 \overline{)8}$

12. $3 \overline{)9}$

13. $24 \div 8 =$

14. What is the quotient of $5 \div 0 =$

15. What is the quotient of $4 \div 1 =$

16. What is the quotient of $0 \div 3 =$

17. What is the quotient of $35 \div 7 =$

18. What is the quotient of $2 \div 2 =$

19. What is the quotient of $64 \div 1 =$

20. What is the quotient of $9 \div 9 =$

21. What is the quotient of $7 \div 0 =$

Write a story problem for the following problems.

1. $3 \times 9 =$

2. $25 \div 5 =$

Name: _____

Ch 3C Review

Evaluate each expression

1. $4m$ for $m = 9$

6. $24 \div (n - 2)$ for $n = 8$

2. $k \div 3$ for $k = 12$

7. $6b$ for $b = 8$

3. $h \times 4$ for $h = 3$

8. $j \div 8$ for $j = 32$

4. $10 \div s$ for $s = 5$

9. $5f + 2f$ for $f = 4$

5. $(y - 9) \times 3$ for $y = 15$

10. $9 \times w$ for $w = 7$

Complete each table and write the rule.

1. Rule = $r \times 3$

In	3	5	6	8	9
Out	9				

2. Rule = $r \div 5$

In	5	20	30	35	45
Out	1				

3. When Multiplication is the rule is the **IN** or **OUT** number largerer?

4. Write the rule

Rule =

In	4	6	8	9	7
Out	28		56		

Solve each equation by testing these values. $M = 2, 3, 5, 6$

1. $2m = 6$

3. $9m = 45$

2. $30 \div m = 10$

4. $4m = 24$

Solve each equation by testing these values. $N = 4, 6, 12, 24, 30$

1. $n \div 3 = 8$

3. $42 \div n = 7$

2. $n \div 3 = 10$

4. $2n = 24$

Write a story problem for the following number sentences

1. Write a story problem for 3×8 .

2. Write a story problem for $12 \div 4$.

Name _____

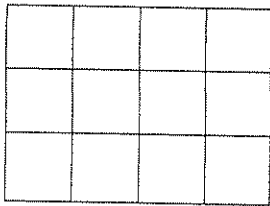
Ch 3 Perf. Assess.

1. There is 2 pieces of cheese on a cheeseburger at McDonald's. How many pieces of cheese will McDonald's need for 6 cheeseburgers. Make a table to solve this problem.

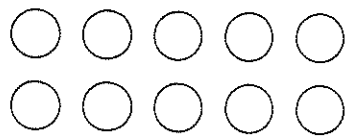
2. Each puppy had 2 bowls. One for food and one for water. If a person had 5 puppies. How many bowls do they have? Make a table to solve this problem.

3. It costs \$2.00 to go to the Ebenezer Basketball game. How much will it cost to take 4 people. Make a table to solve this problem.

4. Use the tile picture to write a multiplication story for $4 \times 3 = 12$



5. Use the picture to write a multiplication story for $2 \times 5 = 10$



1. How many more tires does a car have than a motorcycle? Solve the problem. Show all your work and answer the question in a sentence.

Car = 4 tires

Motorcycle = 2 tires

2. How many more tires does 4 cars have than 4 motorcycles? Solve the problem. Show all your work and answer the question in a sentence.

Car = 4 tires

Motorcycle = 2 tires

Complete the table by writing in the missing numbers.

2	3		5	6		8
8		16	20		28	32

Rule =

Complete the table by writing in the missing numbers.

5	15			20	10	25
1		8	9	4		5

Rule =

Name _____

Meanings for Multiplication

PS 3-1

U.S. Flags The design of the U.S. flag has changed many times because of the growing number of states in the United States. The number of stars on the flag at particular dates in history is described in the exercises below.

1. George Washington's flag of 1775 had 3 rows of 3 stars and 2 rows of 2 stars. How many stars did the flag have altogether?

2. The U.S. flag of 1818 had 4 rows of 5 stars. How many stars did the flag have altogether?

3. The U.S. flag of 1865 had 3 rows of 8 stars and 2 rows of 6 stars. How many stars did the flag have altogether?

4. The U.S. flag of 1912 had 6 rows of 8 stars. How many stars did the flag have altogether?
Draw an array for a flag that has the same number of stars but shows 4×12 .

5. **Writing in Math** Write a multiplication and addition sentence you could use to show how 50 stars can be arranged to form an array on a flag. Explain why they are both correct.



Finding the Greatest Common Factor

Name: _____

Determine the Greatest Common Factor (GCF) for the following problems.

Answers

Ex) 12, 15 To find the GCF of 12 & 15, first write down the factors of each number.

Factors of 12: 1, 2, 3, 4, 6, 12

Factors of 15: 1, 3, 5, 15

2 & 4 are factors both 12 and 15 have in common, with 4 being the greatest. So 4 is the GCF.

Ex. 4

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

1) 9, 6

9 _____, _____, _____

6 _____, _____, _____, _____

2) 20, 15

20 _____, _____, _____, _____, _____, _____

15 _____, _____, _____, _____

3) 20, 28

20 _____, _____, _____, _____, _____, _____

28 _____, _____, _____, _____, _____, _____

4) 18, 2

18 _____, _____, _____, _____, _____, _____

2 _____, _____

5) 42, 12

42 _____, _____, _____, _____, _____, _____, _____, _____

12 _____, _____, _____, _____, _____, _____

6) 22, 16

22 _____, _____, _____, _____

16 _____, _____, _____, _____, _____

7) 20, 30

20 _____, _____, _____, _____, _____, _____

30 _____, _____, _____, _____, _____, _____, _____, _____

8) 12, 30

12 _____, _____, _____, _____, _____, _____

30 _____, _____, _____, _____, _____, _____, _____, _____



Determine which letter best answers each question.

- 1) Which number is a factor of 24 but not a multiple of 6?

A. 7
B. 8
C. 10
D. 12

- 2) Which number is a factor of 20 but not a multiple of 5?

A. 4
B. 6
C. 8
D. 10

- 3) Which number is a factor of 12 but not a multiple of 3?

A. 4
B. 6
C. 8
D. 9

Answers

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

- 4) Which number is a factor of 22 but not a multiple of 11?

A. 2
B. 4
C. 5
D. 6

- 5) Which number is a factor of 12 but not a multiple of 6?

A. 4
B. 8
C. 9
D. 10

- 6) Which number is a factor of 20 but not a multiple of 2?

A. 4
B. 5
C. 10
D. 12

- 7) Which number is a factor of 15 but not a multiple of 3?

A. 4
B. 5
C. 6
D. 8

- 8) Which number is a factor of 16 but not a multiple of 8?

A. 4
B. 6
C. 10
D. 12

- 9) Which number is a factor of 22 but not a multiple of 2?

A. 4
B. 6
C. 7
D. 11

- 10) Which number is a factor of 14 but not a multiple of 7?

A. 2
B. 4
C. 8
D. 12

- 11) Which number is a factor of 14 but not a multiple of 2?

A. 3
B. 4
C. 5
D. 7

- 12) Which number is a factor of 21 but not a multiple of 3?

A. 2
B. 4
C. 5
D. 7

Name _____

Patterns in Multiplying by 0, 1, 2, 5, and 9

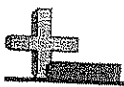
PS 3-2

Vehicle	Number of Wheels
Motorcycle	2
Unicycle	1
Automobile	4
Tricycle	3
Tractor-trailer	18

1. How many wheels are there on 9 motorcycles? _____
2. How many wheels are there on 47 unicycles? _____
3. How many wheels are there on 5 automobiles? _____
4. How many wheels are there on 9 tricycles? _____
5. How many wheels are there on 2 tractor-trailers? _____
6. What property of multiplication helped you solve Exercise 2?

7. What property of multiplication helps you know that $9 \times 2 = 2 \times 9$?

8. **Writing in Math** Explain how you know that in $? \times 4,358 = 0$, the ? will be 0.



3-2

Determining Answer Reasonableness (2,5,10)

Name: _____

Determine if the answer listed is a reasonable answer (yes) or not (no).

Answers•Anything times 2 HAS to end in an even number (2,4,6,8,0). Ex. $2 \times 6 = 12$ $2 \times 13 = 26$ •Anything times 5 HAS to end in an either a 5 or a 0. Ex. $5 \times 4 = 20$ $5 \times 15 = 75$ •Anything times 10 HAS to end in a 0. Ex. $10 \times 7 = 70$ $10 \times 16 = 160$

1) $5 \times 854 = 4,270$ _____

2) $5 \times 367 = 1,837$ _____

3) $10 \times 13 = 135$ _____

4) $2 \times 98 = 197$ _____

5) $5 \times 33 = 165$ _____

6) $2 \times 89 = 179$ _____

7) $2 \times 746 = 1,493$ _____

8) $10 \times 776 = 7,760$ _____

9) $2 \times 555 = 1,110$ _____

10) $5 \times 45 = 225$ _____

11) $10 \times 275 = 2,750$ _____

12) $10 \times 14 = 140$ _____

13) $2 \times 674 = 1,349$ _____

14) $10 \times 182 = 1,828$ _____

15) $10 \times 58 = 586$ _____

16) $5 \times 53 = 269$ _____

17) $2 \times 14 = 29$ _____

18) $10 \times 998 = 9,986$ _____

19) $10 \times 94 = 940$ _____

20) $2 \times 96 = 192$ _____

21) $2 \times 893 = 1,786$ _____

22) $10 \times 90 = 909$ _____

23) $10 \times 634 = 6,349$ _____

24) $2 \times 24 = 48$ _____

25) $5 \times 642 = 3,210$ _____

26) $5 \times 468 = 2,341$ _____

27) $5 \times 36 = 183$ _____

28) $5 \times 73 = 366$ _____

29) $2 \times 132 = 265$ _____

30) $5 \times 297 = 1,489$ _____

Math

www.CommonCoreSheets.com

1

1-15
16-30

97	93	90	87	83	80	77	73	70	67	63	60	57	53	50
47	43	40	37	33	30	27	23	20	17	13	10	7	3	0

Name _____

Using Known Facts to Find Unknown Facts

P 3-3

Use breaking apart to find each product.

1.
$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$$

5. $4 \times 3 =$ _____

6. $9 \times 3 =$ _____

7. $8 \times 5 =$ _____

8. $3 \times 6 =$ _____

9. $6 \times 7 =$ _____

10. $7 \times 9 =$ _____

11. **Number Sense** Sara traced circle stencils for her project. She needs 7 rows of 9 circle stencils. She thought that 7 rows of 9 is the same as 3 rows of 9 and 2 rows of 9. Is this correct?
- _____
- _____
- _____

Reasoning Compare. Use $<$, $>$, or $=$ to fill in each blank \bigcirc .

12. $6 \times 9 \bigcirc 9 \times 6$

13. $9 \times 4 \bigcirc 6 \times 6$

14. $8 \times 8 \bigcirc 7 \times 9$

Test Prep

15. Which of the following is equal to the product of 3×3 ?

A. 9×1

B. 3×1

C. 4×2

D. 6×3

16. **Writing in Math** Explain how the three multiplication sentences are related.

12×2

8×3

6×4

Name: _____

Partial Product Multiplication

Directions: Read each question below. Use partial product multiplication to find the answers. Show your work and circle your answers. Remember to include the correct unit with each of your answers.

1. The Crazy Critters Pet Store has 18 rabbit cages. Each cage contains 4 rabbits. How many rabbits are there in all?

3. Mr. Williams bought 45 packages of hot dogs for the back-to-school party. Each package had 8 hot dogs. How many total hot dogs did he buy?

2. A group of 17 friends went to an amusement park together. Each person paid \$38 for a ticket. How much did the friends spend on all their tickets?

4. Sharon drives 86 miles to and from her job each week. How many miles will she drive in 52 weeks?

5. There are 113 students in the fourth grade. Each student had to pay \$4 to go to the planetarium on a field trip. What was the total amount of money paid by all the fourth graders?

7. Mrs. Sullivan has 11 photo albums. Each photo album has 104 pictures in it. How many total pictures are there in all of the albums?

6. Victoria's grandmother has 7 different colors of buttons. She has 55 buttons in each color. How many buttons does she have in all?

8. Angel bought 13 decks of cards. Each deck had 52 cards in it. How many cards did Angel buy?

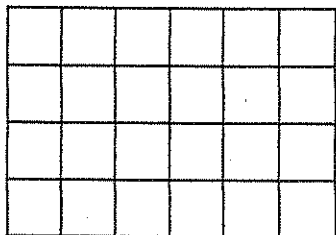
Name _____

How Does Your Garden Grow?

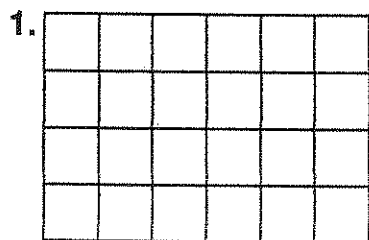
E 3-3
REASONING

Area is the name for the number of square units that are in a given space. You can figure out the area of a rectangle as you would an array. You can also break apart a rectangle to form different combinations and still have the same area.

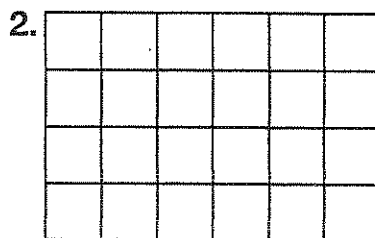
Here is Mary's garden: $4 \times 6 = 24$ square units.



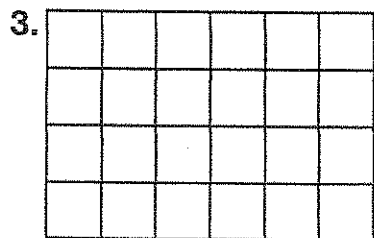
Draw lines and write the first letter of the flower to show several possible planting plans.



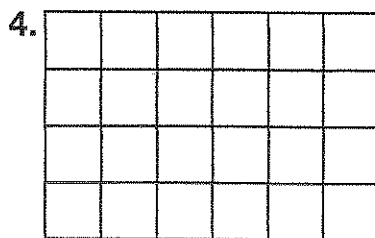
$2 \times 6 =$ tulips
 $2 \times 4 =$ roses
 $2 \times 2 =$ marigolds



$4 \times 4 =$ tulips
 $2 \times 2 =$ roses
 $2 \times 2 =$ marigolds



$3 \times 4 =$ tulips
 $1 \times 6 =$ roses
 $3 \times 2 =$ marigolds



$4 \times 5 =$ tulips
 $1 \times 3 =$ roses
 $1 \times 1 =$ marigolds

Name _____

Multiplying by 10, 11, and 12

P 3-4

1. $4 \times 10 =$ _____ 2. $12 \times 2 =$ _____ 3. $10 \times 6 =$ _____
4. $11 \times 1 =$ _____ 5. $4 \times 12 =$ _____ 6. $8 \times 11 =$ _____
7. $9 \times 10 =$ _____ 8. $12 \times 3 =$ _____ 9. $10 \times 7 =$ _____
10. $11 \times 5 =$ _____ 11. $10 \times 5 =$ _____ 12. $6 \times 12 =$ _____

13. **Number Sense** Beatrice multiplied 10×9 . She quickly found the answer by placing a 0 behind the 9 to get an answer of 90. Is this reasonable?

There are 12 months in 1 year. How many months are in

14. 2 years? _____

15. 3 years? _____

16. 5 years? _____

17. In the classroom there are 5 round tables. There are 4 students sitting at each table. How many students are sitting at the tables altogether? _____

Test Prep

18. How much money is 12 dimes?

A. \$0.60

B. \$1.00

C. \$1.20

D. \$2.00

19. **Writing in Math** Explain how to find 7×11 .

Name _____

Recycling Numbers

**E 3-5
DATA**

Miles and Cynthia participated in a weeklong recycling project. Cynthia collected 4 cans every day, and Miles collected 3 cans every day.

1. Fill in the table to show how many cans each student has collected by the end of each day.

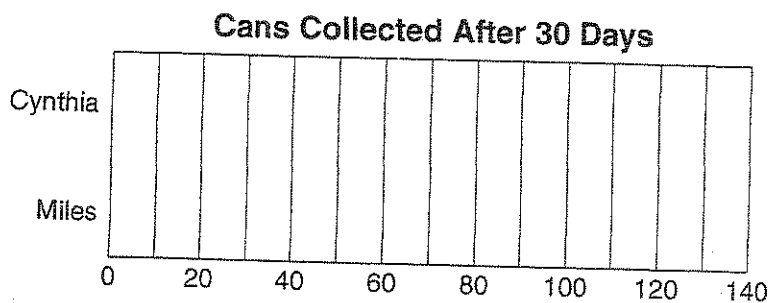
Days	1	2	3	4	5	6	7
Miles	3	6					
Cynthia	4	8					

2. At the end of the week, how many cans did Cynthia collect?

3. At the end of the week, how many cans did Miles collect?

4. If the pattern had continued for another week, a total of 14 days, how many cans would Cynthia have collected? How many would Miles have collected?

5. The project was such a success, it was continued for 30 days. Complete the bar graph to compare the total cans collected by Miles and Cynthia.



Name _____

Meanings for Division

P 3-6

Draw pictures to solve each problem.

1. There are 12 small gift bags. Each bag can hold 1 toy and some stickers. There are 36 stickers. If an equal number of stickers is put in each bag, how many stickers will be in each bag?

2. One egg carton holds 12 eggs. How many cartons are you able to fill with 60 eggs?

3. There are 21 students in Mr. Tentler's class. The students divided themselves evenly into 3 groups. How many students are in each group? _____

Test Prep

4. Calvin read an 18-page chapter in his social studies book in 2 hours. If he read the same number of pages each hour, how many pages did he read per hour?

A. 3 pages

B. 6 pages

C. 9 pages

D. 12 pages

5. **Writing in Math** The class is planning a party. The pizza restaurant cuts each pizza into 8 slices. There are 32 students. How many pizzas does the class need to order for each student to have a slice? Explain.

Name _____

Baby-Sitting in the Neighborhood

E 3-6
DECISION MAKING

Jennifer baby-sits for some of the families in her neighborhood. She wants to decide how she can earn the most money. She has made a chart that shows how long she usually baby-sits for a family and how much she is paid for her job.

Family	Hours	Amount Paid
Roberts	6	\$30
Robinsons	6	\$24
San Giacomos	8	\$40
Lings	5	\$35
Oberlins	7	\$42

1. Which family pays the most per hour? What is the hourly rate?

2. Which family pays the least per hour?

3. Which would pay more, 8 hr of baby-sitting for the Oberlins or 7 hr of baby-sitting for the San Giacomos?

4. On one Friday night, Jennifer is asked to baby-sit for two different families. The Robinsons need her for 5 hr, and the Lings want her to baby-sit for 4 hr. If Jennifer can only take one job and wants to make the most money, which job should she take? How much will she earn?

5. On a different Friday night, the Roberts offer Jennifer a 5-hour baby-sitting job with a \$4 tip, and the Robinsons offer Jennifer an 8-hour baby-sitting job. Which job should Jennifer take? How much more will she earn?

Name _____

Relating Multiplication and Division

R 3-7

Multiplication and division are related, just like addition and subtraction are related.

This is the fact family for 5, 6, and 30:

$$5 \times 6 = 30$$

$$30 \div 6 = 5$$

$$6 \times 5 = 30$$

$$30 \div 5 = 6$$

Complete each fact family.

1. $2 \times \underline{\hspace{2cm}} = 10$

$$10 \div 5 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 10$$

$$10 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

2. $9 \times \underline{\hspace{2cm}} = 27$

$$27 \div 3 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 27$$

$$27 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

3. $8 \times \underline{\hspace{2cm}} = 72$

$$72 \div 8 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 72$$

$$72 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

4. $6 \times \underline{\hspace{2cm}} = 48$

$$48 \div 8 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 48$$

$$48 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Write a fact family for each set of numbers.

5. 7, 4, 28 _____

6. 5, 8, 40 _____

7. **Number Sense** What multiplication facts are part of the fact family for $12 \div 3 = 4$?

Name _____

Division Facts

P 3-8

1. $9 \div 3 =$ _____ 2. $21 \div 7 =$ _____ 3. $30 \div 5 =$ _____
4. $56 \div 8 =$ _____ 5. $72 \div 9 =$ _____ 6. $48 \div 8 =$ _____
7. $9 \overline{)81}$ _____ 8. $6 \overline{)54}$ _____ 9. $7 \overline{)49}$ _____ 10. $3 \overline{)27}$ _____

11. **Reasoning** If $44 \div 4 = 11$, what is $44 \div 11$? Explain.

12. Taylor bought a CD for \$10. How many CDs can she buy for \$40? _____

13. Christian placed an order with the book club. He purchased 2 books for \$3 each and a stamp-making kit that costs \$5. What was his total? _____

Test Prep

14. Which is the quotient of $48 \div 6$?

A. 8

B. 6

C. 4

D. 9

15. **Writing in Math** If $9 \times 8 = 72$, then 72 divided by 8 is what number? Explain how you know without actually finding the quotient.

Name _____

Special Quotients

R 3-9

There are special rules for dividing numbers by 1 and by 0.

Rule: A number divided by 1 is that number.

Examples: $4 \div 1 = 4$

$55 \div 1 = 55$

Rule: A number divided by itself (except 0) is 1.

Examples: $17 \div 17 = 1$

$135 \div 135 = 1$

Rule: Zero divided by a number (except 0) is 0.

Examples: $0 \div 4 = 0$

$0 \div 15 = 0$

Rule: You cannot divide a number by zero.

Examples: $7 \div 0$ cannot be done.

$12 \div 0$ cannot be done.

1. $0 \div 2 =$ _____

2. $4 \div 4 =$ _____

3. $7 \overline{)0}$ _____

4. $9 \overline{)9}$ _____

5. $0 \div 3 =$ _____

6. $10 \overline{)10}$ _____

7. $11 \overline{)0}$ _____

8. $11 \div 1 =$ _____

Compare. Use $>$, $<$, or $=$ for each \bigcirc .

9. $6 \div 6 \bigcirc 3 \div 3$

10. $7 \div 1 \bigcirc 8 \div 8$

11. $0 \div 5 \bigcirc 3 \div 1$

12. $0 \div 4 \bigcirc 0 \div 9$

13. $5 \div 5 \bigcirc 0 \div 5$

14. $7 \div 7 \bigcirc 9 \div 9$

15. $8 \div 1 \bigcirc 0 \div 8$

16. $9 \div 9 \bigcirc 9 \div 1$

17. $0 \div 12 \bigcirc 12 \div 1$

18. $0 \div 11 \bigcirc 0 \div 15$

19. **Number Sense** If $a \div b = 0$, what do you know about a ? _____

Name _____

Special Quotients

P 3-9

1. $0 \div 10 =$ _____ 2. $7 \div 1 =$ _____ 3. $8 \div 8 =$ _____
4. $9 \div 9 =$ _____ 5. $0 \div 5 =$ _____ 6. $5 \div 1 =$ _____
7. $1 \overline{)4}$ _____ 8. $8 \overline{)0}$ _____ 9. $3 \overline{)3}$ _____ 10. $1 \overline{)6}$ _____

11. **Number Sense** If $x \div 9 = 1$, how do you know what x is? Explain.

12. Kenneth has 22 math problems to do for homework. He has 12 problems done. How many more problems does he have left? If he completes 1 problem every minute, how many more minutes does he have to work?

13. There are 8 people who would like to share a box of granola bars that contains 8 bars. How many granola bars does each person get if they share equally?

Test Prep

14. Which is the quotient of $20 \div 20$?

A. 20

B. 2

C. 1

D. 0

15. **Writing in Math** Write a rule for the following number sentence: $0 \div 7 = 0$.

Name _____

Multiplication and Division Stories

PS 3-10

Humane Societies Humane societies take care of homeless animals.

Humane Society

Animal/Item	Number
Dogs	6
Cats	8
Cages	4
Kennels	3

Use the information in the chart to write and solve a story problem for

1. $6 \div 3$. _____

2. 4×2 . _____

3. 6×1 . _____

4. **Writing in Math** A checkerboard or chessboard has 64 squares. Write a multiplication or division story regarding the board.

Name _____

PROBLEM-SOLVING SKILL

P 3-11

Multiple-Step Problems

Write and answer the hidden question or questions.
Then solve the problem. Write your answer in a
complete sentence.

1. Mario and his family went to the county fair. They bought 2 adult passes and 3 children's passes. What was the total cost for the family?

County Fair Admission	
Adults	\$5.00
Students	\$3.00
Children	\$2.00

2. A bus has 12 rows with 1 seat in each row on one side and 12 rows with 2 seats in each row on the other side. How many seats does the bus have altogether?

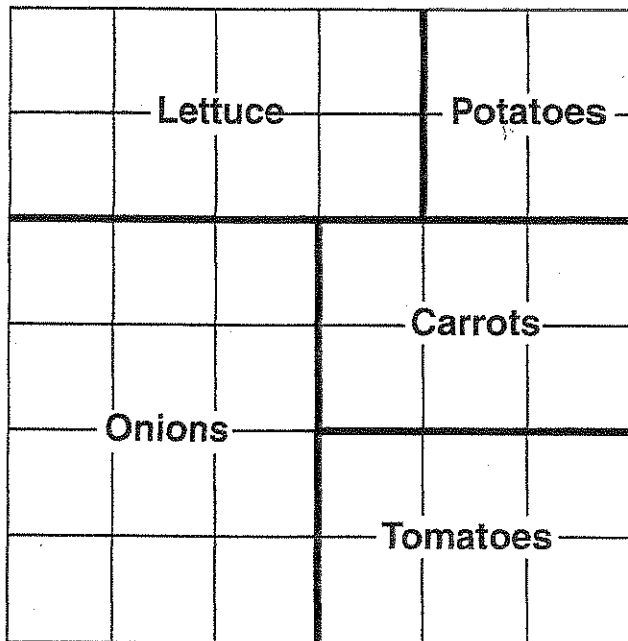
3. **Writing in Math** Write a problem about going to the laundromat that has a hidden question. A single load of laundry costs \$2 and a double load costs \$4. Solve your problem.

Name _____

Graphing Sales

E 3-11
REASONING

Fran grows vegetables in her garden, and then she sells them at the market. A diagram of Fran's vegetable patch and a price list for her vegetables are shown below.



Fran's Fresh Produce		
Carrots	2 lb	\$1
Onions	3 lb	\$2
Tomatoes	3 lb	\$5
Potatoes	2 lb	\$3
Lettuce	1 lb	\$2

1. How many squares are in Fran's garden?

2. Each square in Fran's garden yields 2 lb of vegetables. If Fran plants every square in her garden, how many pounds of vegetables will she be able to grow?

3. Fran makes \$18 selling onions at the market. How many pounds of onions did she sell?

4. A customer buys 6 lb of tomatoes, 4 lb of potatoes, and 4 lb of carrots. He pays with a \$50 bill. How much change should he get back?

Name _____

Writing and Evaluating Expressions

P 3-12

Evaluate each expression for $b = 6$.

1. $6b =$ _____ 2. $\frac{42}{b} =$ _____ 3. $5b =$ _____ 4. $\frac{b}{3} =$ _____

Evaluate each expression for $c = 4$.

5. $\frac{c}{2} =$ _____ 6. $12c$ _____ 7. $8c$ _____ 8. $\frac{16}{c} =$ _____

Evaluate each expression.

9. $(84 \div z) - 6$ for $z = 7$ _____ 10. $(48 \div h) \times 2$ for $h = 8$ _____

Draw a picture that shows the main idea. Then write and evaluate an expression to solve the problem.

11. Diedre helps read to the kindergarten class. She is assigned to q students. She reads for 10 min with each student. Write an expression to represent the total number of minutes Diedre reads with kindergarten students. Evaluate the expression for $q = 5$.

Test Prep

12. Solve.

$$24 \div n = 12$$

A. $n = 5$

B. $n = 4$

C. $n = 3$

D. $n = 2$

13. **Writing in Math** Keith wrote the expression $10d$ to represent the number of dimes in d dollars. Is Keith's expression correct? Explain.

Name _____

Find a Rule

P 3-13

Complete each table. Write the rule.

1.

In	7	6	5	4	3	n
Out	21	18	15	12		

2.

In	5	10	15	20	25	n
Out	1	2	3	4		

In one week, Lyle read 40 pages in his book and his dad gave him 5 stickers. The next week, Lyle read 16 pages and his dad gave him 2 stickers. The third week, Lyle read 56 pages and his dad gave him 7 stickers.

Pages	40	16	56	
Stickers	5	2	7	4

3. Complete the table to show how many pages Lyle had to read to receive 4 stickers from his dad.

4. Write a rule for the table.

Test Prep

5. What is the rule for the table at the right?

In	2	4	6	8	10
Out	14	28	42	56	70

- A. Divide by 7 B. Multiply by 7 C. Divide by 8 D. Multiply by 8

6. **Writing in Math** Complete the table to represent the pattern in figures. Write a rule.

Figure	1	2	3
Circles			



Figure 1



Figure 2

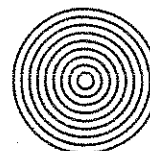


Figure 3



Determine which letter best represents the expression the function machine used.

Answers

1)

Input (R)	5	7	8	9	6
Output	47	67	77	87	57

A. $R \cdot 10 - 3$

B. $R - 3$

C. $R \cdot 3$

D. $R \cdot 10$

1. _____

2)

Input (W)	3	4	8	9	7
Output	10	11	15	16	14

A. $W \cdot 7 + 7$

B. $W + 7$

C. $W \cdot 8 + 7$

D. $W + 12$

2. _____

3)

Input (P)	8	6	1	10	4
Output	54	42	12	66	30

A. $P \cdot 6 + 6$

B. $P \cdot 6$

C. $P \cdot 6 - 6$

D. $P \cdot 9 + 6$

4. _____

4)

Input (N)	9	8	7	6	10
Output	57	50	43	36	64

A. $N \cdot 6$

B. $N \cdot 7 - 6$

C. $N + 6$

D. $N \cdot 7 + 6$

6. _____

5)

Input (Y)	8	7	10	6	4
Output	43	38	53	33	23

A. $Y \cdot 3$

B. $Y \cdot 5 + 3$

C. $Y + 5$

D. $Y + 3$

8. _____

6)

Input (M)	3	2	10	7	6
Output	30	20	100	70	60

A. $M \cdot 10 - 2$

B. $M \cdot 11 + 2$

C. $M \cdot 10$

D. $M \cdot 10 + 2$

10. _____

7)

Input (Q)	4	6	5	8	7
Output	20	30	25	40	35

A. $Q \cdot 5$

B. $Q \cdot 6 - 10$

C. $Q \cdot 5 + 10$

D. $Q \cdot 10$

8)

Input (X)	3	10	6	1	5
Output	30	79	51	16	44

A. $X \cdot 9$

B. $X \cdot 7 + 9$

C. $X \cdot 7 + 13$

D. $X \cdot 8 + 9$

9)

Input (Z)	5	9	10	7	6
Output	7	19	22	13	10

A. $Z \cdot 3 - 8$

B. $Z \cdot 4 - 8$

C. $Z + 12$

D. $Z - 8$

10)

Input (J)	13	19	15	16	20
Output	5	11	7	8	12

A. $J \cdot 8 + 8$

B. $J \cdot 8$

C. $J \cdot 8 + 12$

D. $J - 8$



Determine which number sentence best matches the function machine.

In	Out
84	87
59	62
3	6
81	84
17	20

1. If each input is 'Q', which rule could the function machine be using?

- A. $Q + 3$ B. $Q - 4$
C. $Q + 4$ D. $Q \times 3$

In	Out
6	12
22	28
39	45
72	78
23	29

2. If each input is 'Y', which rule could the function machine be using?

- A. $Y + 6$ B. $Y \times 6$
C. $Y + 6$ D. $Y - 7$

In	Out
73	82
74	83
38	47
10	19
26	35

3. If each input is 'N', which rule could the function machine be using?

- A. $N + 9$ B. $N \times 9$
C. $N \div 9$ D. $N - 9$

In	Out
66	62
52	48
37	33
70	66
12	8

4. If each input is 'T', which rule could the function machine be using?

- A. $T - 4$ B. $T + 6$
C. $T \div 4$ D. $T - 6$

In	Out
7	63
3	27
6	54
9	81
4	36

5. If each input is 'H', which rule could the function machine be using?

- A. $H \times 9$ B. $H - 9$
C. $H - 10$ D. $H + 9$

In	Out
21	7
30	10
6	2
33	11
12	4

6. If each input is 'S', which rule could the function machine be using?

- A. $S + 3$ B. $S + 3$
C. $S - 5$ D. $S - 3$

In	Out
33	43
11	21
79	89
9	19
75	85

7. If each input is 'Z', which rule could the function machine be using?

- A. $Z - 11$ B. $Z + 10$
C. $Z + 12$ D. $Z - 10$

In	Out
7	42
3	18
6	36
11	66
2	12

8. If each input is 'P', which rule could the function machine be using?

- A. $P \times 6$ B. $P - 6$
C. $P + 7$ D. $P + 6$

In	Out
87	85
79	77
27	25
64	62
75	73

9. If each input is 'U', which rule could the function machine be using?

- A. $U \div 2$ B. $U - 3$
C. $U + 2$ D. $U - 2$

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Name _____

Divide and Conquer

E 3-8
ALGEBRA

Find the unknown value in the multiplication fact to help you complete the division fact. Write out both completed facts.

1. $6 \times m = 36$ $\frac{36}{6} = m$

2. $4 \times y = 28$ $\frac{28}{y} = 4$

3. $z \times 8 = 16$ $\frac{16}{8} = z$

4. $7 \times 8 = q$ $\frac{q}{8} = 7$

5. $9 \times r = 54$ $\frac{54}{r} = 9$

6. $10 \times s = 10$ $\frac{10}{10} = s$

7. In a soccer match, each team has 11 players. If 24 people are willing to play a game of soccer, are there enough players for two full teams? Write a multiplication and division sentence to show your answer.
- _____
- _____
- _____

Name _____

PROBLEM-SOLVING APPLICATIONS

P 3-15

Dr. Seuss' Books

Dr. Seuss was one of America's most famous authors and illustrators of childrens' books. His real name was Theodore Geisel. Geisel was born in 1904 in Springfield, Massachusetts. Geisel's first job was drawing cartoon advertisements for a company that made bug spray. Many of the cartoon characters Geisel drew for that job turned into the characters he used in his books.

1. Each Dr. Seuss hardcover book costs about \$9.
How much would you pay if you bought 5 books? _____
2. Oscar found a special sale on Dr. Seuss books.
Each book cost the same price. He paid \$36 for
6 books. How much did he pay for each book? _____

Mrs. Melvin, a librarian, found a special on-line offer for Dr. Seuss books. Each book cost \$2.

3. How much did Mrs. Melvin pay for 6 books? _____
4. If Mrs. Melvin paid \$20 for n books, how many
books did she order? _____

One of Dr. Seuss' most famous books is called *The Foot Book*.

5. There are 27 pages in this book. There are about
27 drawings. On the average, about how many
drawings are on each page?

6. A close study of this book shows that on 6 pages the
word *feet* appears 2 times. What is the total number
of times the word appears on those 6 pages? _____
7. On every 9th page of this book, the word *feet* appears
3 times. Since there are 27 pages in the book, how
many pages have the word *feet* written 3 times? _____

Study Island

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Factors and Multiples

1. Haley has five times as many stuffed animals as she does dolls. Her brother has 15 more video games than Haley has stuffed animals. If Haley has 15 dolls, how many video games does her brother have?

- ☐ A. 230
- ☐ B. 35
- ☐ C. 30
- ☐ D. 90

2. Riverside College had 4,657 students enrolled last year. Of those students, 1,018 graduated and left. If there are 1,106 new students this year, how many students are enrolled at Riverside College this year?

- ☐ A. 2,533
- ☐ B. 4,569
- ☐ C. 6,781
- ☐ D. 4,745

3. Jackie has 23 blue forks and 21 red forks. She is dividing the forks among 5 tables. If each table will get the same number of forks, how many forks will be left over?

- ☐ A. 3
- ☐ B. 4
- ☐ C. 2
- ☐ D. 1

4. Freddy bought 3 bags of pebbles to put in his fish tank. Each bag contains 276 pebbles. After he put the right amount of pebbles in his fish tank, he had 139 pebbles left over. How many pebbles did he put in his fish tank?



Determine which letter best represents the equation to solve the problem.

Answers

- 1) For a potluck lunch Lana brought five bottles of soda. If someone else had already brought nine sodas, how many were there total?

A. $5 + 9$
B. $5 - 9$

C. 5×9
D. $5 \div 9$
- 2) An industrial machine made sixteen shirts. If it takes eight minutes to make each shirt, how many minutes was it working?

A. $16 + 8$
B. $16 - 8$

C. 16×8
D. $16 \div 8$
- 3) A delivery driver had to make six more stops on his route. At each stop he had to drop off seven boxes. How many boxes does he have?

A. $6 + 7$
B. $6 - 7$

C. 6×7
D. $6 \div 7$
- 4) For Lana's birthday she received five dollars from her friends and eight dollars from her relatives. How much money did she get for her birthday?

A. $5 + 8$
B. $5 - 8$

C. 5×8
D. $5 \div 8$
- 5) Isaac was yard sale shopping. He ended up buying nine video games, but only four of them worked. How many bad games did he buy?

A. $9 + 4$
B. $9 - 4$

C. 9×4
D. $9 \div 4$
- 6) Vince was reading through his favorite book series. He had sixty-four books to read total. If he read eight books each week, how many weeks would it take him to finish the series?

A. $64 + 8$
B. $64 - 8$

C. 64×8
D. $64 \div 8$
- 7) Amy bought six music albums online. If each album had five songs, how many songs did she buy total?

A. $6 + 5$
B. $6 - 5$

C. 6×5
D. $6 \div 5$
- 8) For the new school year Nancy's mom bought fifteen glue sticks. If each class needs three glue sticks, how many classes does Nancy have?

A. $15 + 3$
B. $15 - 3$

C. 15×3
D. $15 \div 3$
- 9) Isaac played six games of basketball with his friends. If Isaac scored five points each game, how many points did he score total?

A. $6 + 5$
B. $6 - 5$

C. 6×5
D. $6 \div 5$
- 10) Amy bought five pencils at the school store, but she already had six pencils. How many pencils does she have total?

A. $5 + 6$
B. $5 - 6$

C. 5×6
D. $5 \div 6$
- 11) On the last day of school only sixteen students showed up. If eight of them were checked out early, how many students were left?

A. $16 + 8$
B. $16 - 8$

C. 16×8
D. $16 \div 8$
- 12) Larry's Lawn Care charges three bucks to mow the lawn. If Vince has his lawn mowed three times, how much money did he spend?

A. $3 + 3$
B. $3 - 3$

C. 3×3
D. $3 \div 3$
- 13) At the state fair Henry spent nine tickets on the roller coaster and six tickets on the ferris wheel. How many tickets did he spend total?

A. $9 + 6$
B. $9 - 6$

C. 9×6
D. $9 \div 6$
- 14) Isaac was trying on his old winter clothes. He tried on ten sweaters, but six of them were too small. How many did he have that fit?

A. $10 + 6$
B. $10 - 6$

C. 10×6
D. $10 \div 6$

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____

Name: _____

The Parkview Movie Theatre sold 613 tubs of popcorn Thursday night. The Lakeside Movie Center sold 419 tubs of popcorn Thursday night. Parkview Movie Theatre will need 3 times as many tubs of popcorn for Friday night, and Lakeside Movie Theatre will need 5 times as many tubs for Friday night. Which theatre will need more tubs of popcorn? How many more tubs of popcorn will that theatre need? Explain your problem-solving process.

